

Department of Electrical and Electronic Engineering  
Shahjalal University of Science and Technology

Course Code: EEE485

Course Title: Cellular Mobile and  
Satellite Communication

Duration: 30mins

Total marks: 20

- Q1. Define (i) Elevation angle (ii) Azimuth angle  
(iii) Nadir angle (iv) Apogee (v) Perigee. 10
- Q2. What do you know about LEO and MEO? 10

Term Test  
Course No: EEE 465  
Course Title: Optoelectronics  
Full Marks : 15 Time : 20 minutes

Answer all the questions

- |    |     |   |   |
|----|-----|---|---|
| 1. | (a) | The output spectrum of LASER is narrower than LED.....true or false.                            | 1 |
|    | (b) | Direct band gap materials are used in optoelectronic industry. (T/F)                            | 1 |
|    | (c) | Si is mostly used to produce optoelectronic devices. (T/F)                                      | 1 |
|    | (d) | With proper doping indirect to direct transition is possible. (T/F)                             | 1 |
|    | (e) | Semiconductor laser is more powerful than Gas laser. (T/F)                                      | 1 |
| 2. | (a) | What is a degenerate semiconductor material?  | 3 |
|    | (b) | What is Fermi level energy? Draw the Fermi level for an intrinsic, n type and p type materials. | 4 |
|    | (c) | Write few distinguishing characteristics of LCD display and LED display.                        | 3 |

**Shahjalal University of Science and Technology**  
**Department of Electrical and Electronic Engineering**  
**Course Code: EEE-491**

**Tutorial: 2    Marks: 20    Time: 25 minutes**

- |   |   |
|---|---|
| 1. Define (i) Mean heart rate (ii) Recovery heart rate (iii) Safety heart rate (iv) VV (v) VV (vi) DDDR | 8 |
| 2. Write short notes on, (i) A-V block (ii) Defibrillators  | 2 |
| 3. What are the differences between fixed rate pacemaker and triggered pacemaker?                       | 4 |
| 4. Prove that $F \geq 2 \frac{60 - M}{(M)^2}$   | 6 |



1. Why does auxiliary power supply is not necessary for Phase sequence and voltage asymmetry relay? [1]
2. If Phase lack or wrong phase sequence how does intervention occur? Instant Intervention/ delay Intervention [1]
3. What do you mean by normally energized relay and normally de-energized relay? [1+1]
4. Write down the operating principle of current relay. [3]
5. Write down the function of NO,NC and INHIB terminal [1+1+1]
6. What are the two types of protection are provided by Maximum current three-phase relay? [1]
7. Why does current must be kept higher in Short circuit protection? [1]
8. What type of protection is provided by single-phase current relay? [1]
9. How does over current and under current produces in a transmission line? [1+1]
10. What do you mean by overload, under load and short-circuit protection? [1+1+1]
11. Write down the function of Hysteresis knob. [2]
12. What type of protection is provided by maximum and minimum three phase voltage relay? [1]
13. What do you mean by – i) Nominal Voltage ii) Maximum voltage threshold = 120% iii) Minimum voltage threshold= -50% [1+1+1]
14. Can you protect any electrical equipment from AC and DC current by using the same current relay that you used in lab? [1]
15. What do you mean by Asymmetry= 20% in Phase sequence relay? [1]
16. Write down the operating principle of CT and PT. [2+2]
17. What do you mean by balanced and unbalanced load? [1+1]
18. Write down the operating principle of detecting zero sequence current by using CT and Maximum Single phase relay? [3]
19. Write down the operating principle of detecting imbalance in current between wires by using a differential relay in a three-phase line. [3]